TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

HYDROGEN SENSOR SYSTEM FOR TRANSPORTATION AND STORAGE CONTAINERS

General Reference Information	
1 *	***Need Title*:** Hydrogen Sensor System for Transportation and Storage Containers
2 *	***Need Code:*** RL-02-025-NM
3 *	***Need Summary*:** A need exists in the NMFA complex to develop a hydrogen sensor system for transportation and/or storage containers for pure or impure plutonium oxides, residues, or other nuclear materials that do not currently meet the 3013 storage standard. The technical issue that must be addressed is for the periodic, remote surveillance of internal hydrogen concentration in the free space of the container, to provide a fail-safe safety assurance that it is less than 5%. The overall system needs to include specific hydrogen sensors and any external electronics needed to transmit the data signals. If possible, this system should be integrated with other ongoing initiatives to install other remote sensors for surveillance or monitoring functions such as pressure and safeguards parameters.
4 *	***Origination Date*:** October 2001
5 *	***Need Type*:**
6 *	***Operations Office*:** Richland Operations Office
7	***Geographic Site Name*:** Hanford Site
8 *	***Project*:** Nuclear Materials Stabilization PBS No: RL-CP03
9 *	***National Priority:*** ___1. High - Critical to the success of the EM program, and a solution is required to achieve the current planned cost and schedule. _X_2. Medium - Provides substantial benefit to EM program projects (e.g., moderate to high life-cycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays). ___3. Low - Provides opportunities for significant, but lower cost savings or risk reduction, may reduce the uncertainty in EM program project success.
10	***Operations Office Priority*:**
Problem Description Information	
11	***Operations Office Program Description*:**
12	***Problem Description*:**
13	***Functional Performance Requirements*:**
14	***Definition of Solution*:**
15 *	***Targeted Focus Area*:** Nuclear Materials Focus Area
16	***Potential Benefits*:**

17 *	***Potential Cost Savings*:** Significant cost savings cannot be quantified yet for this monitoring technology.
18 *	***Potential Cost Savings Narrative*:** The objective of the hydrogen monitoring system is to provide assurance that safety basis conditions can be maintained within SNM containers during storage and transportation. The use of a monitoring system gives a much stronger case for safe shipping and storage, and could avoid significant investment in more robust containers, smaller shipping quantities, and extensive safety analyses with related testing and qualification of residue gas generation rates.
19	***Cultural/Stakeholder Basis*:**
20	***Environment, Safety, and Health Basis*:**
21	***Regulatory Drivers*:**
22 *	***Milestones*:** TRP-14-401 Complete PFP Deactivation, 9/30/16
23 *	***Material Streams*:** 3013's to SRS, stream #7235
24	***TSD System*:** Input not required.
25	***Major Contaminants*:**
26	***Contaminated Media*:**
27	***Volume/Size of Contaminated Media*:**
28 *	***Earliest Date Required*:** Could be implemented immediately
29 *	***Latest Date Required*:** 9/2014
Baseline Technology Information	
30	***Baseline Technology/Process*:** Technology Insertion Point(s): (as applicable)
31	***Life-Cycle Cost Using Baseline*:**
32	***Uncertainty on Baseline Life-Cycle Cost*:**
33	***Completion Date Using Baseline:***
Points of Contact (POC)	
34	***Contractor End User POCs*:**
35	***DOE End User POCs*:** Dr. Suzanne. E. Clarke (DOE-RL Project Manager) (509) 373-4931, fax (509) 372-3508, suzanne_e_clarke@rl.gov
36	***Other Contacts:*** M. W. Gibson, Fluor Hanford, Inc. (FH), (509) 373-4869, Fax (509) 372-0232, email mark_w_Gibson@rl.gov

*Element of a Site Need Statement appearing in IPABS-IS